autologous blood into the cisterna magna. After SAH, hemodynamics and blood gases were maintained at baseline values and the ECG and echo were monitored at 30 minute intervals. At 4–6 hours post-SAH, bloodwork, coronary angiography, MCE, and microsphere injections were repeated. ECGs were analyzed for ST/T wave changes and the echo images were assessed for regional wall motion abnormalities (RWMA). The MCE images were qualitatively assessed for perfusion defects. After euthanasia, the LV was sectioned for pathological examination and microsphere counting/blood flow calculations.

Results: n = 5 dogs

ECG changes	RWMA	CBN	Coronary spasm	MCE Defects
2	5	3	0	0

There was no significant change in serum CPK MBs or catecholamines. Radiolabelled microspheres demonstrated an increase in myocardial blood flow after SAH in 62/63 myocardial segments.

Conclusion: This model reproduces the clinical and pathologic cardiac lesions of SAH. These lesions occur in the absence of epicardial spasm or regional myocardial hypoperfusion.

1179-142 Videodensitometric Analysis of LV Opacification With Optison® vs Albunex® Influence of LV Function, Pulmonary Disease, Obesity and Echogenicity

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Background: The efficacy of Optison® (OPT), perflouropropane-filled albumin microspheres, for LV endocardial (ENDO) delineation and qualitative LV opacification (O) has previously been reported.

Methods: To compare quantitative LVO for OPT (0.2, 0.5, 3.0, 5.0 ml) with Albunex® (ALB) (0.08 ml/kg, 0.22 ml/kg), we did videodensitometry in 203 pts (av age 59.2 ± 13.3 yrs, men 79%) evaluated in a multicenter blinded trial, of whom 74 had impaired LV and/or pulmonary function (factors known to impair ALB efficacy), 70 were obese [body mass index (BMI) >30 kg/m^2], and 45 were non-echogenic. (≥4/6 ENDO segments not seen apical 4CH view). Changes in videodensity with contrast agent, at same gain settings as pre-injection echo, were determined at end-diastole (ED) and end-systole (ES) (gray scale 0–255 units) for two regions of interest (ROI): LV apex to mid-cavity (APEX), and mid-cavity to base (MID). Data are given as average ROI density units ± S.D.

Results: Videodensity increases (67%–143%) (MID-ED, MID-ES, APEX-ED, APEX-ES) were: OPT; 16 ± 21, 16 ± 22, 22 ± 25, 17 ± 22 respectively. ALB; 10 ± 18, 8 ± 16, 10 ± 17, 6 ± 15 respectively ($p < 0.0001$) repeated measures ANOVA OPT and ALB, all $p < 0.03$ OPT vs ALB pairwise comparison). On multiple regression analysis, poor LV Fx decreased LVO with ALB but not OPT, decreased echogenicity impaired ALB LVO more than OPT, while increased BMI and decreased lung function impaired OPT and ALB equally.

Conclusion: OPT is superior to ALB for LVO, particularly of the apex and at ES, appears non-susceptible to effects of impaired LV function, and less susceptible to poor echogenicity.

1180 Nuclear Cardiology: Gated SPECT Studies II

Wednesday, April 1, 1998, 9:00 a.m.–11:00 a.m.
Georgia World Congress Center, West Exhibit Hall Level
Presentation Hour: 9:00 a.m.–10:00 a.m.

1180-143 The Correlation Between Myocardial Perfusion and Function Regionally Assessed by Quantitative Gated Sestamibi Tomography in Acute Myocardial Infarction

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Background: ECG-gated myocardial SPECT can simultaneously assess perfusion and function. However, the clinical efficacy of quantitative regional assessment remains to be established. We applied a newly developed quantitative method to gated SPECT and tested the clinical validity by comparing with 2-dimensional echocardiography (2-DE).

Methods: ECG-gated sestamibi SPECT was performed within 7 days after the onset and repeated with a 4-week interval in 43 acute infarct patients. Regional perfusion and function were assessed as % peak counts at end-diastole (ED) and end-systole (ES) and a normalized % wall thickening (N-%WT) in 24 segments using the following formula, respectively; N-%WT = Count (ES-ED) X100/Max count (ES-ED). These data were calculated and delineated by a polar map technique and the results were compared with those by 2-DE.

Results: Infarct-related myocardium was visually detected with sensitivities of ED/ES map 35/43 (81%), N-%WT map 39/43 (91%), and 2-DE 31/41 (76%) and the abnormalities in N-%WT map larger than those in ED/ES map was predominantly observed in 37 (86%) of 43 patients. The complete agreement between gated SPECT and 2-DE in 304 infarct-related and 159 normal areas as follows; ED 78%, ES 81%, and N-%WT 76%. The grade of dysynergic wall motion was well identified by gated SPECT as follows.

2-DE wall motion	Normal	Hypokinesis	Akinesis	Dyskinesis
ED count	84 plusmn; 8	68 ± 15*	52 ± 20*#	40 ± 15*#
ES count	86 ± 9	69 ± 16*	51 ± 20*#	40 ± 17*#
N-%WT	74 ± 18	52 ± 25*	39 ± 23*#	41 ± 25*

Mean ± SD. *ANOVA, $P < 0.05$; * vs normal, # vs hypokinesis

Conclusion: Functional parameters derived from gated myocardial SPECT are useful for detecting regionally dysfunctioning and hypoperfused myocardium and probably for predicting future functional recovery.

1180-144 Visualized Wall Motion Assessment Correlates With Quantitative Ejection Fraction Using Tc-99m Sestamibi ECG Gated SPECT Imaging in Patients With Dilated Cardiomyopathy

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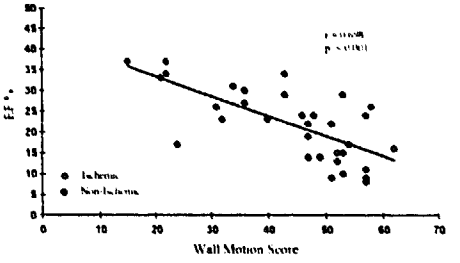
ECG-gated SPECT imaging (GSI) using Tc-99m myocardial perfusion agents permits visual assessment of wall motion (WM) as well as quantitative calculation of LV ejection fraction (EF) and is most useful in patients with LV dysfunction. Little data correlating WM and quantitative EF is available in this population. Therefore 34 patients with dilated cardiomyopathy (23 non-ischemic, 11 ischemic) and EF <35% underwent resting GSI using Tc-99m sestamibi. Images were visually interpreted for WM by 3 experienced readers without knowledge of patient identity using a 17 segment model (0 = normal to 5 = dyskinesis). WM scores were summed from all 17 segments. EF was calculated quantitatively using automated 3-D gated SPECT analysis.

Results: (See graph) There was an excellent correlation between WM scores and quantitative EF ($r = -0.698$, $p < 0.001$).



($r=-0.698$, $p<0.001$).

Conclusion: Visual assessment of wall motion provides reliable clinical information which correlates well with automated 3-D quantitative EF using ECG-gated SPECT image in patients with dilated cardiomyopathy.

1180-145 Comparison Between gated-SPECT and Echocardiography for the Analysis of Global and Regional Left Ventricular Function and Volumes

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Scanty information is available comparing gated myocardial perfusion tomography (g-SPECT) to 2-D echocardiography (ECHO) with respect to assessment of left ventricular (LV) volumes and function (global and segmental). Accordingly, we studied 49 consecutive patients (27 male, 22 female, mean age 61 ± 14) who underwent resting ECHO and g-SPECT studies within 15 days of one another. G-SPECT data were processed using an automatic algorithm (Cedars Quantitative SPECT) whereas ECHO data used standard techniques previously reported by our group. Wall motion was independently scored by experts who were blinded to clinical and angiographic data using